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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/196,683 11/20/98 MIZUNO

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EXAMINER

CREPEAU, J

ART UNIT

PAPER NUMBER

1745

DATE MAILED:

05/24/00

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/196,683	Applicant(s) Mizuno
	Examiner Jonathan Crepeau	Group Art Unit 1745

Responsive to communication(s) filed on Nov 20, 1998.

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

Claim(s) 1-19 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

Claim(s) 1-19 is/are rejected.

Claim(s) _____ is/are objected to.

Claims _____ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The proposed drawing correction, filed on _____ is approved disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some* None of the CERTIFIED copies of the priority documents have been

received.

received in Application No. (Series Code/Serial Number) _____.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). 3

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Claim Objections

1. Claims 3 and 4 are objected to because of the following informalities: in line 3 of both claims, "has" should be "having". Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 8-11, 13-15, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloomfield et al (U.S. Pat. 5,989,741) in view of Salfelder et al (U.S. Pat. 5,636,098).

In column 8, lines 14-40, Bloomfield et al disclose a polymer electrolyte membrane and gas diffusion electrode assembly which is bonded to support frames with a layer of polyurethane adhesive. The support frames define anode and cathode compartments, and thus function as separators.

Bloomfield et al do not explicitly teach that the adhesive may be a mixture of epoxy resin and modified silicone, or that the adhesive has a modulus of elasticity of not greater than 10 MPa or a durometer A hardness of not greater than 90 after cure.

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In column 8, lines 50-57, Salfelder et al teach that conventional adhesives are used to adhere two insulating layers together. Salfelder et al disclose that suitable adhesives include “acrylics such as methacrylate, polyesters, polyamides, polyurethanes, epoxies, silicone containing adhesives, and mixtures thereof”.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because as exemplified by the teaching of Salfelder et al, polyurethanes, epoxies, and silicones are all conventional materials for adhering two objects together. Therefore, the skilled artisan would be able to use equivalent materials to adhere the membrane electrode assembly of Bloomfield et al to the separators. Substitution of equivalents does not require express motivation as long as the prior art recognizes the equivalency (see *In re Fount*, 312 USPQ 532 (CCPA 1982)). Furthermore, the courts have held that it is *prima facie* obvious to combine two compositions, each of which is taught by the prior art to be useful for the same purpose (in this case, epoxy and silicone) in order to form a third composition which is to be used for the very same purpose (*In re Kerkhoven*, 205 USPQ 1069 (CCPA 1980)). Salfelder even hints that a silicone and epoxy combination is known by using the phrase “and mixtures thereof” after the disclosure of the adhesive species.

Regarding the hardness and modulus of elasticity of the claimed adhesive after cure, these properties would be inherent upon combining the materials in the manner described above. Thus, these limitations are not considered to patentably distinguish over the references.

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4. Claims 1-6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloomfield et al in view of Salfelder et al as applied to claims 8-11, 13-15, 18, and 19 above, and further in view of JP 9-199145.

The combination of Bloomfield et al and Salfelder et al do not explicitly teach that the polymer electrolyte has a molar water fraction of less than 4.

In the abstract, the Japanese reference teaches a fuel cell in which the edge of the polymer electrolyte is made hydrophobic before being bonded to the separators.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the Japanese reference exemplifies that the practice of making the sealing portions of a polymer electrolyte membrane hydrophobic is well-known in the art. The artisan would thereby be motivated to make the sealing portions of Bloomfield's membrane hydrophobic in hopes of improving the sealability of the membrane with the separators. Additionally, the recitation of the molar fraction of water in the polymer electrolyte (i.e., a molar fraction of less than 4) is not considered to patentably distinguish over the references because the artisan would possess sufficient skill to optimize this water content during the process of making the edges of the membrane hydrophobic.

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5. Claims 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloomfield et al in view of Salfelder et al as applied to claims 8-11, 13-15, 18, and 19 above, and further in view of Tamura et al (U.S. Pat. 5,328,816).

The combination of Bloomfield et al and Salfelder et al do not explicitly teach that resin beads of a predetermined diameter are included in the adhesive.

In column 4, lines 45-53 Tamura et al teaches that two substrates are laminated together with an adhesive containing spacer beads of a uniform particle diameter.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Tamura et al shows that using resin beads in an adhesive is a conventional method of keeping a uniform distance between two adhered substrates. The artisan would therefore be able to use this teaching as a way of keeping the thickness of the membrane/frame adhesion layer of Bloomfield et al at a predetermined value. Thus, this limitation is considered to be obvious to one of ordinary skill in the art.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bloomfield et al in view of Salfelder et al in further view of JP 9-199145 as applied to claims 1-6 and 17 above, and further in view of Tamura et al.

The combination of Bloomfield et al, Salfelder et al, and JP 9-199145 do not explicitly teach that resin beads of a predetermined diameter are included in the adhesive.

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In column 4, lines 45-53 Tamura et al teaches that two substrates are laminated together with an adhesive containing spacer beads of a uniform particle diameter.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Tamura et al shows that using resin beads in an adhesive is a conventional method of keeping a uniform distance between two adhered substrates. The artisan would therefore be able to use this teaching as a way of keeping the thickness of the membrane/frame adhesion layer of Bloomfield et al or the Japanese reference at a predetermined value. Thus, this limitation is considered to be obvious to one of ordinary skill in the art.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maria Nuzzolillo, can be reached at (703) 305-3776 from Monday-Thursday. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

Documents may be faxed to (703) 306-3429. The official fax number for documents of extreme importance is (703) 305-3599 (it will take longer to receive documents faxed to this number; therefore the first number is preferred).

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Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Maria Nuzzolillo
Supervisory Patent Examiner
Technology Center 1700

JSC

May 22, 2000

